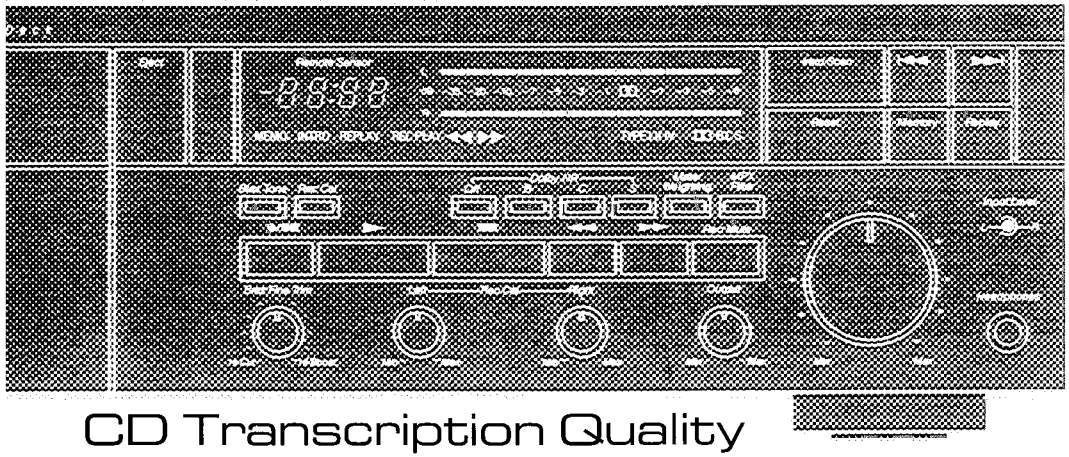
TD4600/TD4500



harman/kardon

CD Transcription Quality
Cassette Deck

OWNER'S MANUAL

GENERAL INSTRUCTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Plug the cassette deck only into 120 Volt AC outlets.

Connecting it to an outlet supplying a higher voltage may create a fire hazard.

Handle the Power Cord Gently

- To disconnect the plug from the AC outlet, pull on the plug itself, not on the cord. Pulling the cord may break the wire.
- Disconnect the plug from the AC outlet whenever the unit is to be left unused for an extended period of time.
- Do not place furniture or other heavy objects on the cord, and avoid dropping heavy objects on it. Also do not make a knot in the cord; this can damage it and cause a fire hazard.

Place the cassette deck on a firm and level surface.

Avoid installing it:

- In moist or humid places;
- Close to heating equipment or in places exposed to direct sunlight;
- In a direct draft from an air conditioner or in other very cold locations;
- In places subject to excessive vibration or dust;
- In poorly ventilated places.

Moving the Unit

Before moving the unit, be sure to unplug the power cord from the AC outlet and disconnect all wires to other stereo components.

Do Not Open the Cabinet

Except for performing routine maintenance (see Page 12), do not attempt to service this unit. Tampering with internal components can cause fire or shock, and may void your guarantee.

If water or small objects enter the unit, unplug the power cord immediately and consult an authorized Harman Kardon service center. Using the unit under such conditions may cause a fire or shock hazard.

Cleaning

Remove dust by wiping the unit with a soft, dry cloth. If necessary, use a soft cloth lightly dampened with mild soapy water; then wipe with a dry cloth. Never use benzine, thinner, alcohol or other volatile agents, and avoid spraying insecticides near the unit.

HARMAN KARDON TD4600/TD4500 CASSETTE DECK

Thank you for choosing a Harman Kardon cassette deck.

And congratulations. Your new unit is an exceptionally well-engineered product that will give you years of superb performance.

The special features of this unit include:

■ CD Transcription Quality

Your cassette deck provides exceptionally wide, flat frequency response, low noise, and low distortion, so as to produce high fidelity recordings from compact disks and other high quality sound sources.

■ Discrete Circuitry

For maximum design flexibility and highest possible performance, the recording and playback circuitry has been designed using discrete electronic components, not off-the-shelf integrated circuits.

■ Large Fluorescent Display

Function settings and signal levels are indicated in bright, clear alphanumerics and easy-to-read format.

■ Ergonomic Design

Controls are engineered and positioned for simple, error-free recording and playback.

■ Intro Scan

At a single touch, the unit automatically previews a pre-recorded tape, playing the first 15 seconds of each segment, then rapidly advancing to the next.

■ Music Search

Skip Forward and Reverse buttons rapidly locate the start of any desired segment on a pre-recorded tape.

■ Remote Control

Convenient unit includes commonly used functions as well as special features such as Intro Scan and Music Search.

■ Bias Tone

Your unit generates a special signal used to quickly and precisely adjust recording circuitry to match the bias characteristics of the particular brand of tape you are using. This results in recordings with superior frequency response and low distortion.

■ Record Calibration

Your unit also generates a signal used, when recording with Dolby Noise Reduction, to adjust the deck's circuitry to match the playback sensitivity of the particular brand of tape you are using. This results in recordings with greater, more consistent dynamic accuracy.

■ Dolby* HX PRO

Special recording circuitry automatically monitors signal levels and adjusts bias in the presence of momentary high frequency peaks. This allows you to record at higher input levels (for better signal quality) without distortion. Dolby HX Pro operates automatically whenever recordings are made, and the resulting higher-fidelity tape can be played back on any cassette deck.

■ Dolby S

(TD4600 only.) The newest Dolby Noise Reduction format, Dolby S provides improved noise reduction, precise transient response, and more consistent decoding during playback.

To get the most from your new cassette deck, please read this manual carefully and follow its instructions. Save the manual for future reference.

*Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol DD and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

CONTROLS and DISPLAYS

Indicates Memory is engaged.

Indicates Intro Scan is engaged.

Eject
Press to load/remove tape cassette.

Indicates Replay is engaged.

Power Switch
Press to turn unit on/off.

Dolby NR

Off
Press to play/record without Dolby Noise Reduction.

B
Press to play/record using Dolby B.

C
Press to play/record using Dolby C.

S (TD4600)
Press to play/record using Dolby S.

Display (TD4500)
Press to turn display panel on/off.

Record/Pause
Puts cassette deck in Record-ready or Pause mode.

Bias Tone/Bias Fine Trim
Adjust when recording. (See Page 7.)

Counter
Indicates tape position in minutes and seconds.

Level Meter
Shows signal level.

Shows if Dolby B, or C or S (TD4600 only) circuits are on.

Displays operating mode: Record, Play, Rewind or Fast Forward.

Automatically indicates type of tape in use.

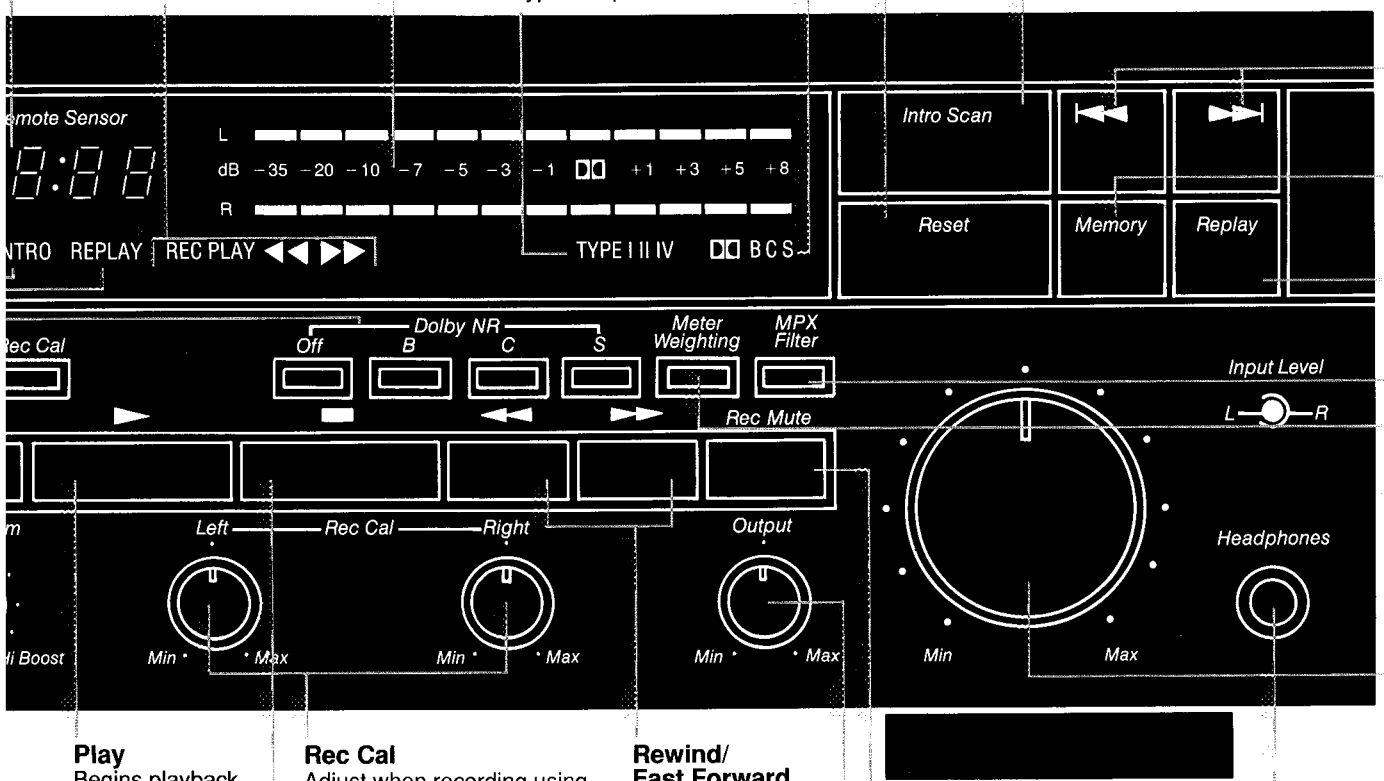
Resets Counter to 00:00.

Previews each segment on a pre-recorded tape.

Skip Reverse/Skip Forward
Locates the start of any desired segment on a pre-recorded tape. (See Page 6.)

Press on: when ◀◀ is pressed, tape rewinds to approximately 00:00 on Counter.

Press on: when tape reaches end, deck automatically rewinds to start and begins Play.



Press when using Dolby Noise Reduction while recording FM stereo broadcasts .

Allows for easy setting of optimum record levels. (See Page 7.)

Input Level
Adjusts recording level and balance.

Play
Begins playback or recording.

Rec Cal
Adjust when recording using Dolby Noise Reduction. (See Page 8.)

Rewind/ Fast Forward
Rapidly rewinds/ advances tape.

Stop

Output
Adjusts output level to headphones and receiver/pre-amp/ integrated amplifier.

Record Mute
Inserts blank space when recording.

Insert headphone plug.

OPERATING INSTRUCTIONS

Inserting a Tape

1. Check cassette tape for excessive slack. If necessary, insert a pencil into one of the cassette hubs and rotate to take up slack.
2. Press Eject.
3. Insert cassette, tape side down, and close compartment door.

NOTE: The cassette deck determines the type of tape in use and sets Bias/ Equalization circuitry automatically.

Playing a Tape

1. Determine if tape was recorded using Dolby B, C or S Noise Reduction; press corresponding button on cassette deck. (TD4500: For tapes recorded in Dolby S, select Dolby B.)
2. Press ► to begin play.
3. If desired, adjust volume to headphones and receiver/pre-amp/ integrated amplifier by turning Output knob.
4. Press Replay if desired. ("Replay" will appear on Display panel.) When end of tape is reached, cassette deck will rewind tape to start and begin replaying automatically.

Previewing a Tape

1. Press Intro Scan. Cassette deck locates the beginning of recorded material and plays for 15 seconds. Tape is then advanced to the beginning of each successive recorded segment, or track, playing for 15 seconds before automatically advancing to the next track.
2. To stop Intro Scan, press ■ (Stop). Or, press ► during any 15-second play segment, and tape will continue to play.

Locating Places on a Tape

1. *Using Skip Forward/Reverse.* To move quickly to the beginning of any desired selection, use the Skip Reverse and Skip Forward buttons (⏮ and ⏭ at upper right corner of the deck).
   a. Pressing ⏮ rewinds the tape to the beginning of the current selection. "P 00" is displayed to indicate this selection.
   b . To locate the beginning of a previous selection, repeat pressing ⏮ . Display shows "P-01," "P-02," "P-03," etc., to indicate first, second, third selection previous to the original selection.
   c. To locate the beginning of the selection following the original selection, press ⏭ . "P 01" is displayed. Continue pressing ⏭ to locate subsequent selections (designated "P 02," "P 03," etc.).
2. *Using the Counter.* The Linear Time Counter indicates approximate tape position in minutes and seconds. (Elapsed time is maintained in Fast Forward and Rewind.)
   a. Press Reset to set Counter to 00:00 at start of tape. Use subsequent Counter readings to identify desired points on tape.
   b. To rewind rapidly to any desired point: (1) Press Reset at desired point (Counter will display 00:00); (2) Press Memory button ("Memo" will be displayed); (3) When ◀◀ is pressed, deck will rewind to approximately 00:00 on Counter.

Note: When Counter is reset to 00:00 at the beginning of a cassette, the approximate time remaining can be determined by subtracting the counter reading from the total tape time. Accuracy is typically within one minute of the tape's actual running time.

Recording a Tape

1. Set Bias Fine Trim knob, Rec Cal knobs and Dolby NR buttons correctly for this recording. (See "Setting the Recording Circuitry," Pages 7-8.)
2. If you are recording an FM stereo broadcast using Dolby Noise Reduction, turn on MPX Filter. Otherwise turn MPX Filter off.
3. Press ●/❚❚. ("REC" will flash on and off on Display Panel.)
4. Play one of the louder segments of the material to be recorded.
5. Check the signal levels indicated by the bars marked L and R on the display. If levels are unequal, correct the imbalance by turning the front part of the Input Level knob, while keeping the back part of the knob stationary.
6. A. Check the Display Panel to determine the tape Type (I, II or IV). Turn front and back parts of the Input Level knob together to set record level:
   (1) For tape Types I and II, the loudest material should illuminate the colored bars at +1 or +3dB;
   (2) For tape Type IV, the loudest material should illuminate the bars at +3 or +5dB.
   B. Alternatively, turn on Meter Weighting and set Input Level at +3dB. (For details see page 7.)
7. Return to the beginning of the material to be recorded.
8. Press ▶ to begin recording. (REC will be continuously displayed.)
9. At end of material to be recorded:
   a. Press ■ (Stop); or
   b. Press Rec Mute. This records 5 seconds of silence on the tape and returns the deck to Rec/Pause (●/❚❚) for recording additional selections.

SETTING RECORDING CIRCUITRY

Meter Weighting

The optimum input level for a recording depends on the high frequency content of the source material. Experienced users will adjust levels accordingly. Meter weighting simplifies level setting by automatically adjusting for the prevalence of high frequency sound.

To use Meter Weighting, press in the Meter Weighting button, then set the input level for occasional peak readings at +3dB.

NOTE: After setting the input level, turn Meter weighting off. Also, make sure it is off before setting Bias Fine Trim or Record Calibration.

Dolby Noise Reduction

The use of Dolby Noise Reduction circuitry dramatically improves the sound quality of recordings by reducing background hiss. The TD4500 incorporates both Dolby B NR and Dolby C NR circuitry. TD4600 includes Dolby B NR, Dolby C NR and Dolby S NR circuitry.

When recording, set Dolby NR to S, C, B or Off to match the capabilities of the equipment on which your tape will be played. In the event tapes will be played on several devices, having different Dolby NR capabilities, observe the following:

- Tapes recorded in Dolby NR (any format) do not play satisfactorily on devices without Dolby NR.
- Tapes recorded in Dolby C NR do not play satisfactorily on devices equipped only with Dolby B NR.
- Tapes recorded in Dolby S NR may be played in Dolby B NR. Make a test recording to see if sound is satisfactory. (For many listeners, the far superior quality of S-recorded tapes when played in Dolby S NR more than compensates for the slight loss of quality in Dolby B NR.)

Bias Fine Trim

Bias Fine Trim enables you to get optimal wide band recordings by adjusting the deck's bias setting to the specific tape you are using.

You locate the correct setting by making a test recording, as follows:

1. Turn off Dolby NR, MPX Filter and Meter Weighting.
2. Start with Bias Fine Trim knob in center position.
3. Load the cassette you are using into the deck and press ▸▸ to advance part way into the tape. Press ■ (Stop).
4. Reset Counter to 00:00; turn Memory on.
5. Press ●/▮▮ (Record/Pause).
6. Press Bias Tone button and hold; press ▸ to begin recording. NOTE: Left and right meter levels will be equal.
7. After approximately 10 seconds, release Bias Tone button, and press ■ (Stop).
8. Press ◂◂; tape will rewind to approximately 00:00.
9. Again press and hold Bias Tone button; press ▸ (Play).

10. Note left and right meter levels. If right level is lower than left, turn Bias Fine Trim knob to the right. If right level is higher than left, turn knob to left.
11. Reset Counter to 00:00.
12. With knob at new setting, repeat steps 5-11. Repeat until equal levels have been determined.
13. Make a note of the correct setting for this brand and formulation of tape. To find the ideal settings for other tape brands or formulations, repeat this test.

Record Calibration

Rec Cal enables you to get more accurate recordings using Dolby Noise Reduction, by adjusting the deck's recording circuitry to match the playback sensitivity of the specific tape you are using.

You locate the correct Rec Cal settings by making a test recording, as follows:

1. Turn off Dolby Noise Reduction, MPX Filter and Meter Weighting.
2. Start with left and right Rec Cal knobs in center position.
3. Load the cassette you are using into the deck and press ▸▸ to advance part way into the tape. Press ■ (Stop).
4. Reset Counter to 00:00; turn Memory on.
5. Press ●/▮▮ (Record/Pause).
6. Press Rec Cal button and hold; press ▸ to begin recording. NOTE: Left and right meter levels will indicate 0 dB.
7. After approximately 10 seconds, release Rec Cal button, and press ■ (Stop).
8. Press ◂◂; tape will rewind to approximately 00:00.
9. Press ▸ (Play).
10. Note left channel meter level. If less than 0 dB, turn the left Rec Cal knob to the right; if more than 0 dB, turn the left Rec Cal knob to the left.
11. Note right channel meter level, and adjust Right Rec Cal knob accordingly.
12. Reset Counter to 00:00.
13. With knobs at new settings, repeat steps 6-12. Repeat until 0dB playback levels have been determined.
14. Make a note of the correct settings for this brand and formulation of tape. To find the ideal settings for other tape brands or formulations, repeat this test.

INSTALLATION

Packaging
Save all packing material. It is essential for shipping should you move or in the event the unit ever needs repair.

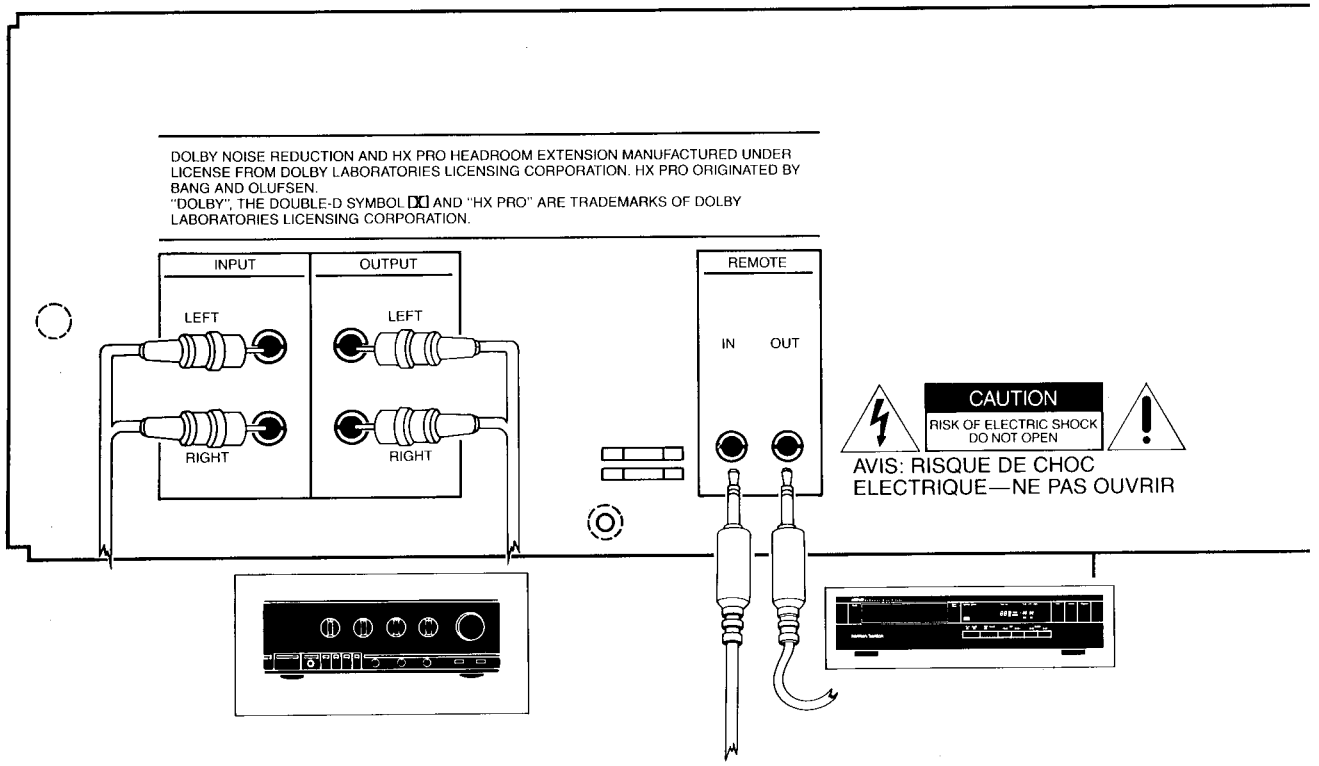
Placement
Unit may be placed on top of or beneath other stereo components, so long as its placement meets the cooling requirements of the component beneath it.

Hook-up
1. Make sure all stereo components are turned off.
2. Use the cable provided to connect the left and right Input jacks of the cassette deck to the "Tape Monitor Output" jacks (sometimes labeled "Record") of your pre-amplifier, integrated amplifier or receiver.
3. Connect the left and right Output jacks on the deck to the "Tape Input" jacks (often labeled "Play" or "Monitor") on your receiver/pre-amp/integrated amplifier.

NOTE: If you are using an equalizer and/or other external signal processing components, which are now connected to the Tape Monitor loop of your receiver/pre-amp/integrated amplifier, you have two choices:

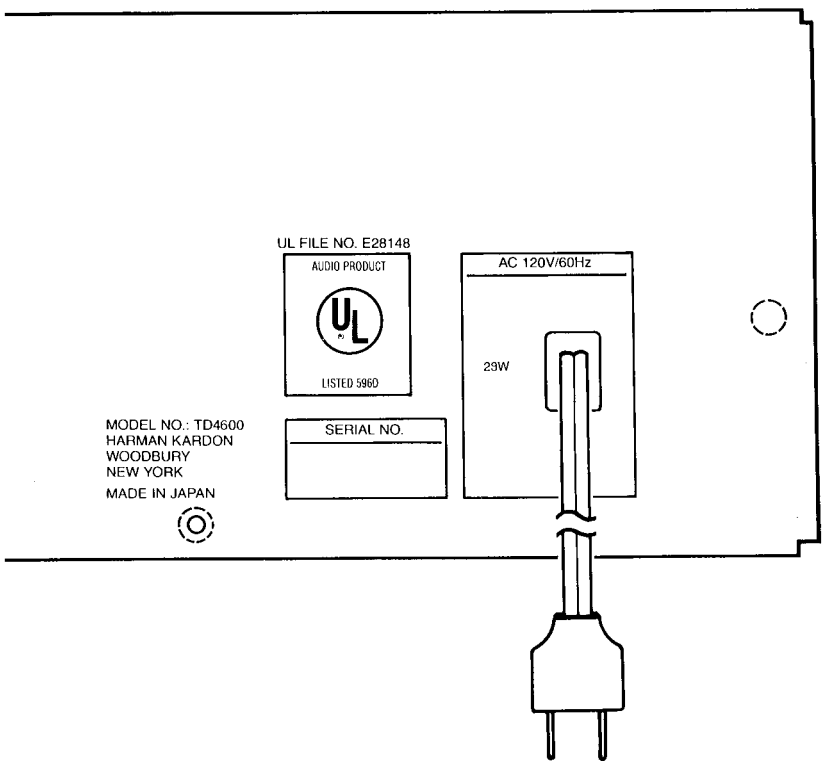
a. Connect the deck to the Tape Monitor loop provided on the last outboard component; or

b. If your receiver/pre-amp/integrated amplifier has two Tape Monitor loops, you may connect the cassette deck to the unused loop. (In this case, the cassette deck will be unaffected by the external signal processing components.)



AC Power

Plug the cord into polarized wall socket, polarized extension cord, or AC convenience outlet on another stereo component.



Remote Control

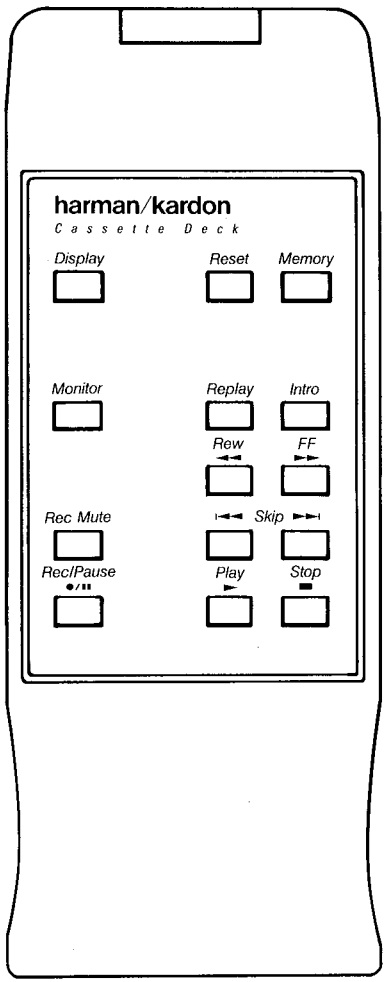
1. *If you wish to control your deck through an external infrared remote sensor:* connect the wire from the remote sensor to the "Remote Input" jack on the deck.*

2. To control the deck, you may use the remote control unit supplied with your cassette deck. Alternatively, you may use a universal remote control unit, such as Harman Kardon's Masterworks,™ which can also control other components, such as TVs, VCRs, receivers and CD players. Masterworks is available from your Harman Kardon dealer.

3. Connection to other stereo components.
   (a) *To control additional components through the external sensor:* run a control wire from the "Remote Output" jack on your deck to the "Remote Input" jack of another component. Continue this process to include multiple components.*
   (b) *Even if you do not use an external sensor:* you may still wish to connect your deck to another component, *if you have one with a "Remote Input" jack but with no built-in remote sensor.* In this case, you may use the built-in sensor in your deck to control the other component.*

*NOTE: Not all components are compatible. However it will not hurt to experiment.

REMOTE CONTROL



The 14 keys on the control unit function in the same way as the corresponding keys on your cassette deck, with two exceptions.

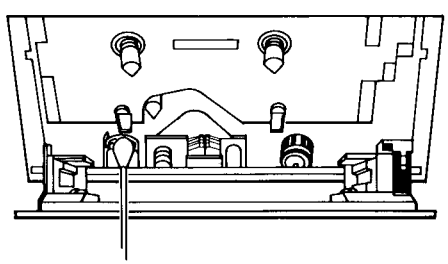
(1.) The Display key turns the deck's Display Panel on and off. This key works the same as the corresponding key on the TD4500; on the TD4600, there is no corresponding key on the deck.

(2.) The Monitor key does not affect the operation of the TD4500 or TD4600.

The control unit operates effectively within 7 meters (23 feet) and within an angle of 30° from the cassette deck. Using the control unit near fluorescent lights may shorten this range, as will any dust or dirt that is allowed to accumulate on the front end of the remote control, or the "Remote Sensor" area of your deck. Also avoid blocking the line of sight between cassette deck and remote.

The control unit is powered by two AA batteries, included with your cassette deck. When you replace weak batteries, replace both at the same time. When the remote is to be unused for an extended period, remove the batteries to prevent damage from corrosion.

MAINTENANCE



Cleaning the Tape Heads

Tape heads must be cleaned periodically to remove tape particles, which gradually build up on the heads, impairing sound quality and increasing wear on tapes. Heads may be cleaned in either of two ways:

1. Slightly dampen a cotton swab in isopropyl alcohol and gently rub the surfaces of each tape head. Use a second dampened swab to clean other surfaces coated with tape material. Repeat this cleaning every 30 tapes.
2. Use a tape head cleaning kit, which comes in the form of a tape cassette, and is simply inserted into the deck. Follow the instructions included with the kit.

Demagnetization

Tape heads and other internal parts gradually pick up magnetic fields, which can add noise to your tapes and even partially erase them. To prevent this problem, tape heads should be periodically demagnetized, using either of two devices:

1. A battery-powered demagnetizer is easiest to use. It comes in the form of a tape cassette and is simply inserted into the deck. Be certain to use this demagnetizer as frequently as its instructions recommend.
2. A handheld demagnetizer, which plugs into a wall socket, is much more effective, since it generates a stronger demagnetization field. For the same reason, it must be used very carefully, or it may do more harm than good. Before buying or using one, please consult your Harman Kardon dealer. Also read and follow carefully the instructions included with the unit, and be sure no recorded tapes are near the demagnetizer when it is turned on.

Care of Tapes

1. Store cassettes in their cases, in a location away from direct sunlight, excessive heat and high humidity.
2. Avoid placing a tape near a television set or loudspeaker; their magnetic fields can partially erase the tape.
3. To prevent accidental erasure of a tape, use a small screwdriver to remove the two square tabs located on the side of the cassette opposite the exposed tape. With these tabs removed, the tape cannot be re-recorded. If you later wish to re-record an erasure-protected tape, simply cover the small holes with adhesive tape.
4. Do not use old cassettes whose tape no longer moves smoothly from reel to reel. They may jam and damage your deck.

TROUBLE SHOOTING

This unit is designed for trouble-free operation; most problems users encounter are due to operating errors. So if you have a problem, first check the chart below for a possible solution. If the problem persists, consult your authorized Harman Kardon service center.

If the Problem Is:	Make Sure That:
The Display Panel does not illuminate when the Power switch is pressed.	■ The power cord is plugged in securely. ■ The outlet is live.
No sound is heard when Play is pressed.	■ The tape is not blank. (Level indicators on the Display panel will flash if sound is recorded on the tape.) ■ The receiver/pre-amp/integrated amplifier is on, and its Source, Tape Monitor, and Speaker switches are set correctly. ■ The tape deck is connected properly. ■ The hookup cables are unbroken.
The cassette deck does not record.	■ The erase-prevention tabs have not been removed from the tape cassette. ■ The Input Level knob is set high enough. ■ The tape deck is connected properly. ■ The hookup cables are unbroken.
When a tape you have recorded is played back, the sound is distorted.	■ The Input Level was not set too high during recording. ■ A Dolby NR encoded source tape was copied with the Dolby NR and B/C properly set. ■ Bias Fine Trim was set correctly when recording. ■ The tape is not worn out. ■ The tape head is not dirty or magnetized (see Page 12).
When a tape you have recorded is played back, the sound is muffled, with reduced high frequencies.	■ The Dolby Noise Reduction switches were set correctly during recording. ■ Bias Fine Trim and Rec Cal were set correctly when recording. ■ The tape head is not dirty or magnetized (see Page 12).

FICATIONS

	TD4600	TD4500
):	1-7/8	1-7/8
	2	2
Type:	Isotropic	Isotropic
se, -20dB (IHF std):	20Hz-20kHz ±3dB	20Hz-20kHz ±3dB
	all formulations	all formulations
al Response (0dB):	20Hz-20kHz ±3dB	20Hz-20kHz ±3dB
	w/Dolby C NR & metal tape	w/Dolby C NR & metal tape
	0.045%	0.045%
	0.07%	0.07%
tio		
	57dB	57dB
	65dB	65dB
	73dB	73dB
	75dB	—
stortion		
, Dolby NR level:	1.0%	1.0%
n:	45dB	45dB
:	70dB	70dB
	60dB	60dB
	105kHz	105kHz
Rewind Time:	90 sec (C-60)	90 sec (C-60)
er Range:	-35dB to +8dB	-35dB to +8dB
10k Ohm load:	1.15V	1.15V
dB) Line:	45mV	45mV
ine:	22k Ohms	22k Ohms
ı x d):	17-3/8" x 5" x 12-5/8"	17-3/8" x 5" x 12-5/8"
	442 mm x 126 mm x 320 mm	442 mm x 126 mm x 320 mm
	14.8 lbs/6.7kg	13.4 lbs/6.1kg

are subject to change without notice.